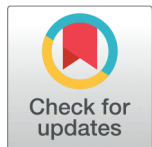


RESEARCH ARTICLE



An investigation on production and productivity export performance of significant spices in the Country India

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B Devi Priya^{1*}, M Thyagarajan²

1 Research Scholar, Department of Commerce, Dr. SNS Rajalakshmi College of Arts and Science, Coimbatore, 641035, Tamilnadu, India. Tel.: 8870589872

2 Professor, Department of Commerce, Dr. SNS Rajalakshmi College of Arts and Science, Coimbatore, 641035, Tamilnadu, India

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* **Corresponding author.**

Tel: 8870589872

devipriyanv@gmail.com

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Abstract

Background: To strengthen the economy growth through agriculture, there ought to be increase in production and balance in trade terms of export and import. India competes with the global markets in exporting significant spices and few other horticulture products that ends up in economy growth with the help of an array of governmental initiatives to the farmers. **Objectives:** To analyze the Growth Rate and Instability in Area, Production and Productivity of significant spices and to examine the export of major spices from India during the period of 10 years from 2010 - 2020. **Methods:** The data have been analyzed with statistical tools; the study has used Compound Annual Growth Rate Analysis (CAGR) & Instability Rate (IR) for analysis. The secondary data used for this study was taken from the Spice Board of India annual reports for the period of 10 years from 2010-2011 to 2019-2020 for the selected major spices. **Findings:** The analysis provided compound annual growth rate and instability for the selected spices in India in terms of area, production, productivity and export performance for the period of 10 years from 2010-2011 to 2019-2020 to showcase the Indian export in the global markets and to know the status of spices growth in India compared to the previous years (2001-2010). **Recommendation:** A major concern for the survival in the export market is to increase the productivity and also maintain the quality of the product. So, the major recommendations to be noted by the Spice Board and Agriculture and spice industry to increase the productivity is, i) cultivating quality and best products, ii) utmost care in consumer and contaminants, iii) knowing the new trends in global market for export, iv) enough storage precautions based on the products v) harvesting properly vi) hygiene both in environment and personal. Also, some of the major schemes can be introduced under agriculture for better cultivation of spices by the farmers and it leads to the highest production and productivity and it also impacts the Indian economy.

Keywords: Agriculture Science; spices; production; productivity; export; performance

1 Introduction

Nature has given many varieties of plants and humans have utilized some of them out of those varieties for their own benefits. Spices are one of the best varieties and it is most commonly used plant all over the world. Even though spices are required in very small amount, it has its own properties and benefits. Some are used for medicines, scents etc. The name spice is derived from the word species, which was applied to groups of some exotic foodstuffs in the ancient times. Spice is a plant product with fragrance utilized by the humans as a flavouring or condiment. It is a well-known appetizer, normally refers to the derivatives from certain herbs like Seeds, Leaves, Bark, roots etc. They are utilized predominantly for upgrading taste of the food. Spices are one of the major demands in the food processing industry.

India is known as "The origin and Land of spices". There is no other country in the world that produces as much kind of spices as India. India is dominating in producing spices due to the environmental condition. The moderate Indian climate is suitable for almost all spices grow here. In India, spices are one of the important commercial crops from the point of view of both domestic consumption and exportation. Besides, large quantities of spices are also being consumed within the country for flavouring foods and are also used in other areas like medicine, pharmaceutical, perfumery, cosmetics and the same has been exported to several other countries which increase the export ratio in the country. India is the world's largest producer in terms of spices; the country produces about 75 varieties of spices and exporting a huge amount. India has especially important place in the world spice export among all countries in the world including those which do not produce spices or spice products.

Some of the southern and northern states in India are Kerala, Karnataka, Andhra Pradesh, Rajasthan, Tamil Nadu plays vital role in producing the spices. Kerala, Karnataka, Tamil Nadu produces Pepper and Small Cardamom whereas Large Cardamom is produced in the northern states like Sikkim and West Bengal. Some other states like Andhra Pradesh, Madhya Pradesh, Mizoram, Chhattisgarh, Uttaranchal; Meghalaya produces Ginger which is very essential. States like Orissa, Tamil Nadu, West Bengal, Tripura, Assam, and Bihar are the producers Turmeric. On the other hand, Rajasthan, Gujarat and Uttar Pradesh are the producers of Cumin. Likewise, India is one of the major and significant spice producers among the world.

Table 1. Categories of spices in India

MAJOR/ SIGNIFICANT SPICES	SEED SPICES	TREE SPICES	HERBAL SPICES	MISCELLANEOUS SPICES
Black pepper	Coriander	Tamarind	Marjoram	Vanilla
Cardamom (Small & Large)	Fenugreek	Cinnamon	Thyme	Garlic
Ginger	Celery	Nutmeg / Mace	Basil	Saffron
Turmeric	Fennel	Clove	Oregano	Juniper Berry
Chillies	Caraway	Tejpat	Savoury	Pepper Long
Cumin	Aniseed	Cam bodge	Tarragon	Greater Galaga
	Dill seed	Kokum	Rose Mary	Curry powder
	Poppy seed	Curry leaves	Horse radish	Spice Oils
	Mustard	Cassia	Hyssop	Spice Mixtures
	Parsley	Asafoetida	Lovage	
	Ajwan	Pomegranate		

Export performance of chilli and cumin from India and portrayed an empirical analysis to show the growth and instability under area, production, yield and export volume and value of chilli and cumin in India and also revealed the chilli area under cultivation showed the negative growth. Whereas cumin showed positive and significant growth and export quantity and value of chilli and cumin had shown significant positive growth⁽¹⁾. Overall performance of small cardamom export from India to different international locations for the year 1970-71 to 2017-18 in terms of growth rate, instability, geographic concentration and the sources of growth and variability in export of small cardamom from India. In the study, it is shown that lower growth rate and higher instability were observed during period II which could be the result of increased domestic demand and stiff competition in global market especially from Guatemala⁽²⁾. Analysis of Spices exports in for about more than two decades (1990 - 2017). In the study the author revealed that the year wise growth rate has been drastically increased. At some point of time the growth rate has reached the maximum level. Also, the entire export of Spices has been exceeded the target in terms of each volume and worth. The result shown as the overall export is high in the middle of the decade and low at the end of the year. The profit rates also depend on the money value and currency rate⁽³⁾. Production and the Growth Trends of Spices in India for the period from 2001-02 to 2015-16. It is observed that the overall growth rate in production of spices in India showed a positive trend⁽⁴⁾. Performance of growth in terms of Area, Production, Productivity and Export of Spices in India. Also calculated the compound growth rate and instability index in area, production and productivity over last ten years were analyzed. India has achieved positive growth rate in production and productivity over the years. The spices crops recorded better growth in export

and a very less growth in import over last years in terms of value earned. The high growth and low instability index indicate sustainability in production which is the prerequisite and displays the tremendous indication for the export potential from India⁽⁵⁾. Production and exports and critically analyzed the foreign exchange earnings through spices exports. The end result shows that there is no significant growth in area and production of spices for the duration of 2007-08 to 2016-17⁽⁶⁾. Revealed the overall performance of Indian spices exports during the WTO regime are found satisfactory and openness has led to the growth of India's spice export.⁽⁷⁾ discussed the growth, cultivation, market analysis of pepper in the major exports. The study shows the export performance is good and in increasing phase comparing to other countries⁽⁸⁾.

Empirical study of linkage between commodity exports and balance of payments has been declining and the traditional role of commodity exports and also the emerging unfavourable conditions, for the commodity exports of developing countries, have a mixed impact on their economies. Also, the study analyzed that India is performing well in exporting the spices⁽⁹⁾. Examined the economic analysis of export performance of black pepper in Indian country and revealed that the export shares to major destinations have come down. India's share should be increased by offering quality pepper at competitive prices than other black pepper producing countries⁽¹⁰⁾. Analyzed Commodity Wise Export of Spice Products from India and analysed the spices production and export performance. The results shown that spices can be used as a way to link small scale growers with spices business, but on situation that accurate governance structures, exact relation among the events and discount of transaction fees are taken into consideration for export spices commodities⁽¹¹⁾. The study portrayed that there was a decrease in the growth rate of area, production and productivity of pepper in Kerala. The export value showed a growth rate of 19.68 percent during 2005-06 to 2013-14 and export quantity showed a negative growth rate of 2.87 during the same period⁽¹²⁾. Examined the economic wise growth and export performance of Ginger in India. It is identified that the growth rate between pre and post-WTO period in terms of area and production were positive. The export growth of post WTO period in terms of quantity and values were found to be low but the unit price value were found to be significant and positive⁽¹³⁾. Empirical analysis of growth and instability in major spices in India and examined trend in growth and instability of major spices in India during 1974-75 to 2012-13, and observed that almost all the spices have recorded a positive and significant growth rate in all the sub-periods. Variations in weather and price fluctuations were observed as the important factors affecting growth and instability in spices in India⁽¹⁴⁾. Growth rate study of Indian export and import of spices and analyzed the degree and direction of spices export from India and to study the import quantity and value of spices by India. The result revealed that 90% of spice is used for domestic consumption and the rest is exported as raw and also as well as value added products for other products⁽¹⁵⁾.

2 Scope of study

The investigation and analysis is all about to calculate the growth rate and instability in production and productivity of significant spices in the country India. In this research work, the authors examined the export of spices in the international markets. The study conjointly covers the analysis of one decade of performance. The info has been taken from Annual reports and Spices Board of India for elaborate analysis.

3 Research Methodology

Sample design

This study is attempted for analysis of significant spices data in terms of growth rate & instability in area, production and productivity and to examine the export performance of significant spices in India. The major 6 spice products such as Pepper, Cardamom (Small and Large), Chilli, Ginger and Turmeric are selected by using Convenient Sampling Method (CVM) for analysis.

Data sources

The study used only secondary data which has been obtained from Spice Board of India Annual Reports and from various publications which is cited in the references, official records and web source such as Handbook of Indian Spice Board.

Period of study

The research study covers a period of 10 years data from 2010-2011 to 2019-2020.

Geographical area of spices covered

Southern and Northern states in India like Kerala, Karnataka, Madhya Pradesh, Andhra, TamilNadu, Maharashtra, Telengana and Rajasthan etc are the major spice producers and these geographical areas are taken for analysis to examine the growth rate and instability

4 Statistical research analysis tools

4.1 Compound Annual Growth Rate Analysis (CAGR)

To measure the Growth rate of major spice for Area, Production and Yield, the CAGR was worked out using the formula given below,

$$\text{CAGR}(t_0, t_n) = \left(\frac{V(t_n)}{V(t_0)} \right)^{1/t_n - t_0} - 1$$

Where as,

$V(t_0)$ is a initial Value

$V(t_n)$ is the end Value

$T_n - t_0$ is the number of years

4.2 Instability analysis

To measure the instability of major spice area, yield and production, the coefficient of variations (CV) was worked out using the formulae given below

$$\text{CV} = (\text{Standard Deviation} / \text{Mean}) \times 100$$

5 Export performance of Indian spices

The exports of Indian spices and the products of spices surged to Rs 21,515.4 crores (USD 3033.44 million) and a volume of 11,83,000 tonnes in 2019-20, supporting their strong interest in global business sectors in spite of firm rivalry.

During the previous year of 2018-19, the country has exported a total of 11,00,250 MT of spices and its products. This means, in quantity terms, 7.52 growth ratio has marked. In rupee terms, the spices exports in 2019-20 grown by 10 percent from Rs 19,505.81 crore and in dollar terms, the growth was 8 percent.

The spices export during 2019-20 surpassed the fixed objective both as far as volume, rupee worth and dollar terms of significant worth against the export target of 10,75,000 MT valued Rs 19,666.90 crores (US\$2850.28) for the year 2019-20, along these lines enlisting an expansion of eight percent in volume, 10% in rupee terms and eight percent in dollar terms.

The total number of spices and spice products exports stood at 215 of every 2019-20 as against 219 things in the previous year. Chilli, mint products, cumin, spice oils and oleoresins and turmeric kept on being the major contributors in the spices crate contributing 80% of the total profit. Though the Indian spices are exported to 185 countries, China 24%, US 16%, Bangladesh 6%, Thailand 5%, UAE 6%, Sri Lanka, Malaysia, UK, Indonesia, and Germany are the major takers, adding to more than 70% of the fare income.

Chilli kept on being the most demanded spice in 2019-20 with fares of 4,84,000 tonnes amounting to Rs 6,221.70 crores, enrolling an expansion of 15 percent in esteem from the earlier year. Cumin was the second-most traded zest, recording an expansion of 16 percent in volume and 12 percent in esteem. A total volume of 2,10,000 tonnes of cumin valued at Rs.3225 crores was traded from India in 2019-20.

The nation India has satisfied the expanding worldwide interest for its quality spices despite intense rivalry in worldwide business sectors. Taking into account the worldwide pandemic circumstance, the interest in quality Indian spices is on the ascent for their in susceptibility boosting properties. The zest which demonstrated the most extreme increment when contrasted with the past monetary year was ginger, enlisting a 178 percent expansion in volume and 129 percent in esteem at 50,410 tonnes and 449.05 crores individually. The fare for large cardamom heightened by 28 percent in volume and 11 percent in esteem and 1,100 tonnes of the zest was sent out intersection Rs 67.58 crores in esteem terms in 2019-20. Flavour blends have been in incredible interest in the unfamiliar business sectors inferable from their prepared to-utilize highlights.

6 Results and Discussions

Table 2. Growth and instability of area in Hectare for major Spices

YEAR	PEPPER	CARDAMOM (small)	CARDAMOM (large)	CHILLI	GINGER	TURMERIC
2010-11	183780	71012	26984	716428	167432	232022
2011-12	201381	71285	26460	793921	125374	251824
2012-13	122500	69870	26060	787530	134430	194330
2013- 14	122400	69970	26060	791930	683160	207570
2014- 15	123900	69970	26387	766620	153100	178470
2015- 16	131790	70080	26387	742950	156910	183480
2016- 17	134280	69357	26617	859790	171730	247630
2017-18	139487	69330	26617	678880	168989	231637
2018- 19	138929	69132	42826	721145	173578	245255
2019-20	137378	69993	43600	682580	172040	245958
MEAN	143582.50	69999.90	29799.80	754177.40	210674.30	221817.60
STDEV	26955.93	692.52	7076.86	56631.50	166843.38	28297.30
CV	18.77	0.99	23.75	7.51	79.19	12.76
CAGR	-2.86	-0.14	4.91	-0.48	0.27	0.58

In Table 2, As far as major spices considered in area wise, it shows the declining stage in Hectare. There was slight positive growth rate in Cardamom (Large), Ginger and Turmeric. Remaining spices like Pepper, Cardamom (Small) and Chilli shows the negative growth. Pepper and Cardamom (Small) cultivation is shrinking steadily due to poor weather condition and flood in Kerala because Kerala is the major cultivator of Pepper and Cardamom (Small). Instability in area increased in Ginger and Cardamom (Large). When compare to previous years 2001-2010, the area wise seems to be declined stage due to various reasons such as flood, landslide due to erratic rainfall, increase in conversion of agriculture land to industrial area, crop failure due to adverse climatic condition. Overall, the instability in area decreased throughout the period of study and however slight fluctuations found in second period of study in terms of selected spices areas.

Table 3. Growth and instability of production in Tonnes for major Spices

YEAR	PEPPER	CARDAMOM (small)	CARDAMOM (large)	CHILLI	GINGER	TURMERIC
2010-11	48000	10380	3918	1299191	937043	1268280
2011-12	43000	15000	3860	1448215	924417	1398862
2012-13	65000	14000	4145	1378400	669350	986690
2013- 14	37000	16000	4465	1376400	683160	1092630
2014- 15	70000	18000	4850	1621480	795820	846250
2015- 16	48500	23890	5315	1497440	1025110	967060
2016- 17	57000	17990	5572	2411150	1830590	925270
2017-18	64000	20650	5906	1718200	1794560	863460
2018- 19	48000	12940	8669	1689524	1845664	929967
2019-20	61000	11230	8600	1702350	1843530	938955
MEAN	54150.00	16008.00	5530.00	1614235.00	1234924.40	1021742.40
STDEV	10785.92	4223.41	1775.45	318330.28	522569.98	180332.46
CV	19.92	26.38	32.11	19.72	42.32	17.65
CAGR	2.42	0.79	8.17	2.74	7.00	-2.96

In Table 3, the result shows that growth rate of pepper production increased from 48,000 tonnes in 2010 -11 to 70,000 tonnes in 2015-2016. The analysis shows clearly that production has rapidly increased when compare to previous years 2001-2010. The remaining period of the study 2016-2020 has steadily increased with some minor fluctuations. It was due to drought and untimely rains in major pepper growing states. The turmeric shows negative growth rate of -2.96 even though the area of cultivation is high when compare to previous years, it is due to decline in prices and stock aging are forcing turmeric farmers

in the southern state to shift to other crops. Other spices like Cardamom (Small), Cardamom (Large), Ginger and Chilli has positive growth rate in production. Overall Instability in production is decreased throughout the period of study.

Table 4. Growth and instability in productivity for major Spices

YEAR	PEPPER	CARDAMOM (small)	CARDAMOM (large)	CHILLI	GINGER	TURMERIC
2010-11	0.261	0.146	0.145	1.813	5.597	5.466
2011-12	0.214	0.210	0.146	1.824	7.373	5.555
2012-13	0.531	0.200	0.159	1.750	4.979	5.077
2013- 14	0.302	0.229	0.171	1.738	1.000	5.264
2014- 15	0.565	0.257	0.184	2.115	5.198	4.742
2015- 16	0.368	0.341	0.201	2.016	6.533	5.271
2016- 17	0.424	0.259	0.209	2.804	10.660	3.737
2017-18	0.459	0.298	0.222	2.531	10.619	3.728
2018- 19	0.346	0.187	0.202	2.343	10.633	3.792
2019-20	0.444	0.160	0.197	2.494	10.716	3.818
MEAN	0.39	0.23	0.18	2.14	7.33	4.64
STDEV	0.11	0.06	0.03	0.36	3.13	0.75
CV	27.65	25.27	14.02	16.80	42.72	16.04
CAGR	5.45	0.93	3.11	3.23	6.71	-3.52

Table 4 shows the view of productivity of major spices. However, the area and production of selected spices shows shrinking and fluctuations, the productivity shows positive growth rate in all selected spices except turmeric because the production of turmeric was low when compare to previous years 2001-2010. Instability level decreased in all selected spices. When compare to other selected spices ginger shows high instability rate due to environmental conditions like flood, poor weather, landslides etc. Overall, Instability in productivity has decreased in the period of study compare to the previous years 2001-2010 and that shows the production and cultivation area is good.

Table 5. Export of major spices from India in quantity (In Tonnes)

YEAR	PEPPER	CARDAMOM (small)	CARDAMOM (large)	CHILLI	GINGER	TURMERIC
2010-11	18,850	1,175	775	2,40,000	15,750	49,250
2011-12	26,700	4,650	935	2,41,000	21,550	79,500
2012-13	15,363	2,372	1,217	3,01,000	22,207	88,513
2013- 14	21,250	3,600	1,110	3,12,500	23,300	77,500
2014- 15	21,450	3,795	665	3,47,000	40,400	86,000
2015- 16	28,100	5,500	600	3,47,500	24,800	88,500
2016- 17	17,600	3,850	780	4,00,250	24,950	1,16,500
2017-18	16,840	5,680	760	4,43,900	22,605	1,07,300
2018- 19	13,540	2,850	860	4,68,500	18,150	1,33,600
2019-20	16,250	2,090	1,100	4,84,000	50,410	1,36,000
MEAN	19,594	3,177	880	3,58,565	26,412	96,266
STDEV	4,548	1,746	195	83,911	10,118	25,639
CV	23	55	22	23	38	27
CAGR	-1.47	5.92	3.56	7.26	12.33	10.69

Table 5 shows that the Pepper export from India has declined in terms of production when compare to previous years due to the competition in the global market and Vietnam stands top in pepper production during the period of study. India needs to boost its competitiveness in the face of the fierce challenge from exporters like Vietnam, Indonesia and Brazil. Export of cardamom from India significantly earning over decades. The export of cardamom from India has steadily increased with some fluctuations during the selected period. Among selected spices the largest quantity exported from India was found to be Chilli. The export of Chilli was increased even though the decrease in area. It might be due to enhancement in the production and productivity. Ginger and Turmeric has approximately increasing. As far turmeric is considered it stands 1st position in the world

with 62.9% of share even it shows negative growth rate in production and productivity. Instability in export performance has decreased in certain period when compare to previous years and that helps the India to export the spices in a better way.

Table 6. Export of major Spices from India in values (Rupees in Crores)

YEAR	PEPPER	CARDAMOM (small)	CARDAMOM (large)	CHILLI	GINGER	TURMERIC
2010-11	38,318.50	13,216.25	4,462.90	1,53,554.00	12,131.25	70,285.15
2011-12	87,813.45	36,322.28	6,830.00	2,14,408.00	20,420.02	73,434.40
2012-13	63,810.29	21,215.04	6,254.59	2,38,060.90	18,725.14	55,487.70
2013- 14	94,002.34	28,380.88	7,961.15	2,72,227.20	25,614.27	66,675.85
2014- 15	1,20,842.16	32,346.75	8,403.90	3,51,710.00	33,133.00	74,435.00
2015- 16	1,73,041.50	44,982.75	7,550.70	3,99,743.97	27,595.56	92,165.00
2016- 17	1,14,312.60	42,150.33	8,265.45	5,07,075.63	25,704.85	1,24,190.65
2017-18	82,078.48	60,908.15	5,646.60	4,25,632.74	21,607.49	1,03,567.63
2018- 19	56,868.00	35,625.00	6,106.00	5,41,117.50	19,602.00	1,41,616.00
2019-20	55,187.00	42,629.50	6,758.50	6,22,170.00	44,905.00	1,21,640.00
MEAN	88627.43	35777.69	6823.98	372569.99	24943.86	92349.74
STDEV	37642.39	12616.36	1191.65	146264.83	8582.17	27583.21
CV	42.473	35.263	17.463	39.258	34.406	29.868
CAGR	3.71	12.42	4.23	15.01	13.98	5.63

Table 6 shows the export of major spices from India in values during 2010 – 11 to 2019 – 20. As far as CAGR & Instability is concern, the market value for all the selected spices shows positive growth. Chilli shows the highest export value which increases to 6, 22,170 in 2019-20 when compare to the previous years 2001-2010. Other five spices like Pepper, Cardamom (S), Cardamom (L), Chilli, Ginger, Turmeric shows the fluctuations in terms of production and productivity. Instability is increased in global export in terms of export values due to domestic and international dollar values.

7 Overall growth rate and instability analysis for the period of study 2010-2020

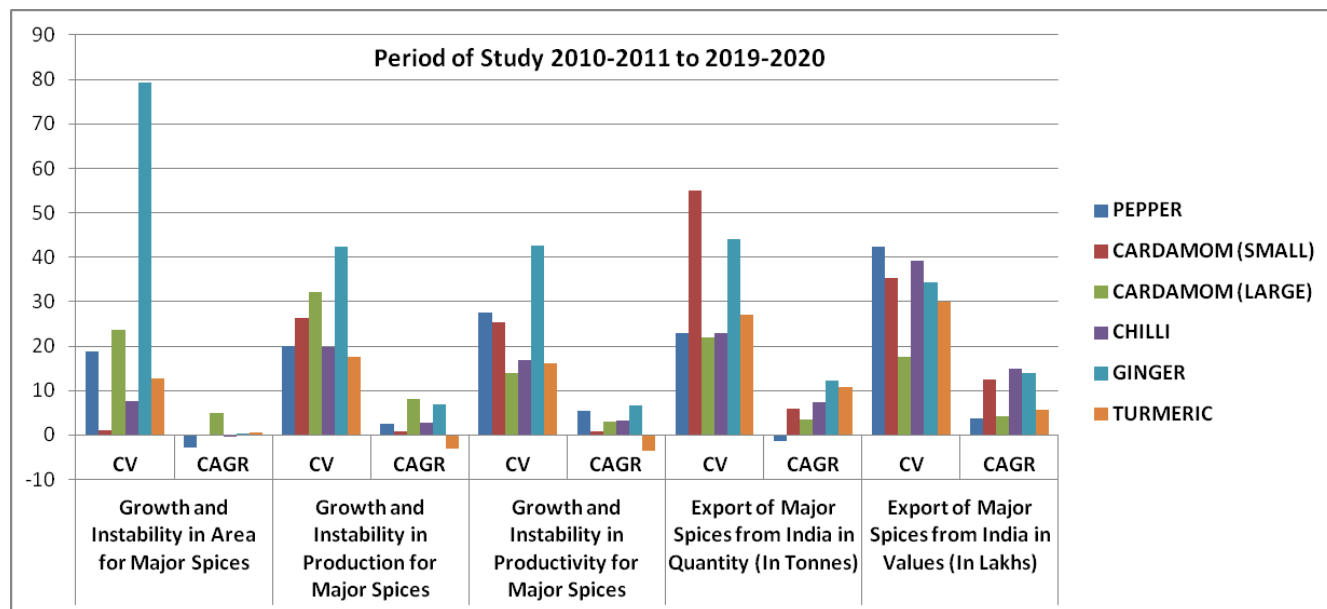


Fig 1. Growth and instability analysis

The Figure 1 shows the overall Growth Rate and Instability analysis of significant spices in Area, Production, Productivity and export in the form of Quantity and Values. During the analysis, the Coefficient of Variation in Ginger is high in Area, Production,

and Productivity. In terms of CAGR, Area wise Cardamom (L) shows the highest growth, Production and productivity wise Ginger shows the highest growth. In terms of export Quantity in Coefficient of variation shows high and in chilli has the highest value in export. According to growth rate Turmeric and chilli has high growth rate in terms of export value.

8 Findings of commodity wise export of significant spices from India

- Pepper shows increase in production wise and slight decrease in area wise due to poor climatic condition and slight fall in export due to competitive. The CAGR records growth of 3.71 in terms of export values and -1.47 in terms of export quantity.
- Cardamom (Small) shows the positive side in area, production, productivity and export performance with CAGR of 12.42 in terms of export values.
- Cardamom (Large) shows the increase record in area, production, productivity and export performance with CAGR of 4.23 in terms of export values.
- Chilli continued to be the most exported and demand spice in the global market for the period of 2010-2020 when compared to 2001-2010 with the CAGR of 15.01 in terms of export values. While compiling the Instability has decreased with slight fluctuations.
- Ginger shows positive record in terms of production, productivity and export performance but slight year wise fluctuation in area wise due to environmental hazards and poor harvesting. The CAGR in terms of export values is 13.98.
- Turmeric shows decrease in production and productivity due to landslides and poor farm planning and lack of schemes and fluctuation in market price. But slight increase in area and export performance. The CAGR records 5.63 with reference to export values.

9 Suggestions

- The government and the Ministry of Agriculture have to announce new agricultural schemes to boost agriculture and improve productivity.
- To create demand in the global market quality of products should be cultivated by the farmers
- Farm incentives should be provided to the farmers through agriculture ministry scheme to improve the production and productivity
- Immediate funds to be raised to the farmers during the disasters and loss of production
- Exporters can be rewarded for their better performances and can be motivated
- The Latest technology packaging methods to be adopted for fast packaging the spice products to avoid damages
- Provide proper warehouse to stock the spices based on the climatic condition.
- The government itself can procure spice products from the farmers and export, so that the farmers can get good price and the supply of goods can be maintained properly in the country for exports.
- Government should reduce the paper procedure for the exporters in order to increase the exports

10 Conclusion

India exports spices to more than 150 countries. The major share of India is about 44% in output and 36% in the international spice trade. America is the largest importer of spices, followed by Germany and other parts of Europe and Middle East. World major spice producers are India (1.6million tonnes/annum), China (99,000 tonnes/annum), Bangladesh (48,000 tonnes/annum), Pakistan (45,000 tonnes/annum) and Nepal (15,000 tonnes/annum). The Indian government is very keen on increasing value-addition in spices. Spread of COVID-19 across the global market and business has affected the supply chain and brought the world economies in a slowdown condition. India's foreign trade during 2019-20 has also registered a negative growth mainly due to the slowdown of the export during the end of March, 2020. However, despite the COVID Pandemic, spices export from India has continued its upward trend during 2019-20 and has crossed the 3 billion US \$ mark for the first time in the history of Spices export. The estimated export during 2019-20 has been 11,83,000 tonnes valued Rs.21515.40 crores (US \$3033.44 million) against 11,00,250 tonnes valued Rs.19505.81 crores (US \$2805.50 million) during the last financial year. The spices export during 2019-20 attained an all-time record in terms of both volume and value. Compared to last year, the export has shown an increase of 10% in rupee value and 8% in quantity. In dollar terms, the increase is 8%. Still, it can possibly perform better under such conditions the Government should plan strong polices and improvement of methodologies for spices sends out for exports.

References

- 1) Chaitra GB, Sonnad JS. Export performance of Chilli and Cumin from India: An empirical analysis. *Journal of Pharmacognosy and Photochemistry*. 2019;8(2):2014–2020. Available from: <https://www.phytojournal.com/archives/?year=2019&vol=8&issue=2&ArticleId=7975>.
- 2) Indhushree A, Kuruvila A. Performance of small cardamom export from India. *Journal of Tropical Agriculture*. 2019;57(2):122–131. Available from: <http://jtropag.kau.in/index.php/ojs2/article/view/803>.
- 3) Palani S. An Analysis of Spices Export in India. *Science, Technology and Development*. 2019;8(8):114–122. Available from: <http://journalstd.com/gallery/18-aug2019.pdf>.
- 4) Varadharaj S, Prakash AR. An Analytical Study on the Production and the Growth Trends of Spices in India. *International Journal of Research and Analytical Reviews*. 2018;5(3):227–281. Available from: http://ijrar.com/upload_issue/ijrar_issue_20542114.pdf.
- 5) Devi G, Jadav KS. Growth Performance in Area, Production, Productivity and Export of Spices in India. *Acta Scientific Agriculture*. 2018;2(11):87–90. Available from: <https://actascientific.com/ASAG/pdf/ASAG-02-0233.pdf>.
- 6) Rao EM, Prasad RS. Production and Export Performance Indian Spices. *International Journal of Exclusive Management Research*. 2018;8(5):1–13. Available from: <https://ijemr.in/wp-content/uploads/2018/04/Production-and-Export-Performance-IndianSpices.pdf>.
- 7) Ibrahim YC. Performance of spices exports during the WTO regime: A disaggregated analysis. *International Journal of Applied Research*. 2017;3(7):577–584. Available from: <https://www.allresearchjournal.com/archives/2017/vol3issue7/PartI/3-7-79-585.pdf>.
- 8) Chakravorthy R, Banu IP. Study on the Export Performance of Pepper in India. *International Journal of Interdisciplinary Research in Arts and Humanities*. 2017;2(1):145–148. Available from: <http://doi.org/10.5281/zenodo.508893>.
- 9) Babu PH. Export performance of spices in India: An empirical study. *Parikalpana: KIIT Journal of Management*. 2017;13(1):66. Available from: <https://dx.doi.org/10.23862/kiit-parikalpana/2017/v13/i1/151275>.
- 10) Felix KT, Arivarasan S, Rajasekar DD. An economic analysis of export performance of Black Pepper in India. *International Journal of Current Advanced Research*. 2016;5(7):1137–1138. Available from: <http://www.journalijcar.org/sites/default/files/issue-files/IJCAR-A-0753.pdf>.
- 11) Kumar NB, Kumar MS. A Study on Commodity Wise Export of Spice Products From India. *Intercontinental Journal of Marketing Research Review*. 2015;3(2):129–139. Available from: <https://zenodo.org/record/508893/files/66.PDF>.
- 12) Jacob A, Job E. Pepper Production And Export From India: Growth and Instability Analysis. *International Journal of Current Research*. 2015;7(9):20388–20391. Available from: <https://www.journalcra.com/sites/default/files/issue-pdf/10245.pdf>.
- 13) Karthick V, Alagumani T, Anbarassan A. Growth and Export Performance of Ginger in India– An Economic Analysis. *Economic Affairs*. 2015;60(2):207. Available from: <https://dx.doi.org/10.5958/0976-4666.2015.00030.3>.
- 14) Joshi D, Singh HP. An Empirical Analysis of Growth and Instability in Major Spices in India. *International Journal of Agriculture Sciences*. 2015;7(2):440–444. Available from: https://bioinfopublication.org/files/articles/7_2_3_IJAS.pdf.
- 15) Yogesh MS, Mokshapathy S. Growth of Indian Export And Import Of Spices. *BEST: International Journal of Humanities, Arts, Medicine and Sciences*. 2014;2(9):41–46. Available from: https://www.academia.edu/8648912/GROWTH_OF_INDIAN_EXPORT_AND_IMPORT_OF_SPICES.